CGI of 56 Leonard Street
New York, (Herzog & de Meuron), 2008 (© Bloomimages)

the city of renderings. photorealism, spectacle and abstraction in contemporary urban landscapes

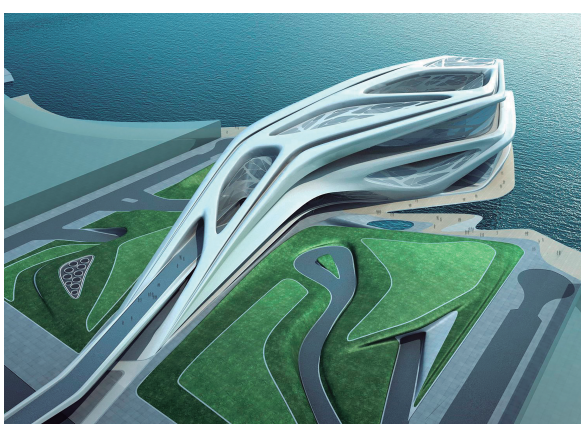
Michele Nastasi
PhD Candidate, Ca' Foscari University of Venice-IUAV, studio@michelenastasi.com

Photorealistic renderings of architectural designs are now pervasive in media of every kind and regarded as indispensable in the world of architecture at every level. They occupy a space between architecture and photography whose mixing of virtual and real, production and re-production, entails a series of implicit premises and results that are generally taken for granted, conveying a markedly spectacular vision of the city and of architecture. After discussing the reasons for the growing use of photorealism in architecture, the paper presents and analyzes the main categories of photorealistic renderings and their recurrent characteristics, with the aim of showing how the most evident aspects of these images correspond to a range of tendencies in contemporary architecture. The essay, in addition, puts forward some reflections on the relationship between photorealistic renderings and architecture, the reality of construction and society.

keywords Rendering, CGI, Photorealism, Spectacular architecture, Photography

Over the last twenty-five years photography has influenced, in its shaping of an imagery, the production of architecture and the public attitude toward it, leading to a noticeable spectacularization of architecture and urban landscapes on a global scale. Through the concept of "artialization"[1] –nature imitating art– the landscapes of contemporary cities can be seen as the result of processes related to the production and circulation of photographic images. The circulation of this imagery at a global level is not confined to actual photographs, but also involves computer generated imagery (CGI), the process known as "rendering" that represents buildings and landscapes using criteria borrowed from photography.

This essay analyses a recent inexorable trend in rendering, that of photorealism, so that computer-generated images no longer resemble drawings or models but look increasingly like photographs, showing the uninitiated buildings as if they had already been constructed. The realism of these images means they are able to present a specific vision of architecture in a persuasive manner, privileging certain aspects and downplaying others and contributing to shaping and influencing reality. Although such renderings are today considered indispensable in all areas of architecture, common in media of every sort and in some countries legal requirements for the approval of any project, critical reflection on them is scant[2]. This subject is part of a wider program of research into CGI I am carrying out for my doctoral thesis in History of the Arts. I think it advisable here to skip a historical and general treatment of this kind of representation and focus instead on the interactions between contemporary architecture and photographic image embodied by renderings, making reference to architects whose work is particularly closely linked to the production and circulation of spectacular images. This part of the research is based principally on a preliminary series of semi-structured interviews carried out in 2016 with the founders of leading rendering services in Europe and North America (e.g. Luxigon, MIR, Bloomimages, Visualhouse) and architects (partners and design directors) from international architectural practices (e.g. SOM, Foster+Partners, OMA, MVRDV, Zaha Hadid Architects), and on analysis of the photorealistic images produced by them. Thus it is a highly specific field of contemporary architecture, the most visually advanced part and, above all, the one that gets most exposure in not just the specialist but also the mass media.



f1_CGI of the Abu Dhabi Performing Arts Center
Abu Dhabi, 2006 (© ZHA)

the spread of photorealism in architecture

There are many reasons for the popularity of photorealism. The first is the great technological advances over the last decade in computer graphics, still a rapidly evolving field. CGI began to appear in architecture about twenty years ago, when it was still the product of a limited technology that gave the images an abstract appearance. Only ten years ago, most renderings were still images in which the architecture was pictured in empty or only faintly realistic spaces, with an emphasis on its formal aspects. These renderings, which have influenced architectural culture, look anachronistic today and have been supplanted by a more realistic representation. Design and visualization software continues to improve and it has become easier not only to design complex geometries but to visualize them in a photorealistic manner. In architecture, just as in other fields, the mere fact of being able to do something new is a valid reason for trying it out, since the effect of surprise and wonder is an added value for images that must always, in one way or another, promote a project.

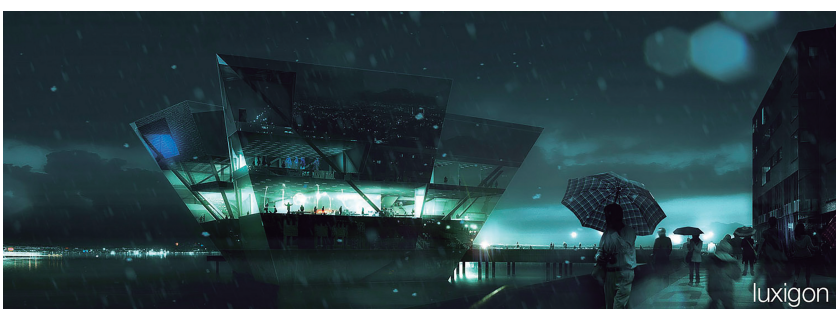
The second reason for the success of photorealism in architecture is that it makes things easier to understand. Most people are not able to appraise a design without seeing realistic images, something that historically has contributed to making architecture an elitist discipline. Photorealism is an effective means of presenting projects to the uninitiated and is greatly expanding the potential interest in architecture, contributing to its popularization. These renderings are close to the visual culture of the general public, whose imagination is shaped not just by direct observation of the world, often very limited, but also by movies, television and the way in which reality is presented by photography.

f2_CGI of APM
Le Brassus, Switzerland (BIG), 2014 (© MIR)

The simulation of the elements of photographic language can be so perfect that it is hard to tell whether you are looking at pictures of actual buildings or 3D visualizations. A clear example of how elements of the photographic vocabulary are utilized to create a photorealistic effect is provided by lens flare, the scattering and reflection of light in a camera lens that is common in renderings. Since the camera used to produce a computer-generated image is not real but virtual, there are no technical reasons for the appearance of lens flare. Yet the effect is frequently used precisely to make the image look more like a photograph, helping to create the kind of "lens-based" atmosphere found in photography and cinematography. In fact the public is accustomed to CGI and animations of very high technical quality. Photorealistic animated films are common and with the advent of the smartphone and gaming new generations are growing more and more used to perceiving architecture through images. Many architects claim to detest such renderings as a way of representing architecture, as they consider them too prosaic and close to the imagery of

advertising and entertainment: yet there are also many who recognize that these images have become so pervasive today that they are an indispensable element in various aspects, all of them extremely important, of the work of an architect[3].

The third reason is the client. The people who commission buildings from architects are used to this sort of image and expect it, as a great deal of information about the project and its uses is packed into it. It is comprehensible that investors want to see their projects with all the materials, as if already constructed, in part because CGI tends to emphasize the photographic representation of materials, especially facings and different types of glass with their expressive characteristics of transparency and reflection. The extreme realism of these visualizations has become a way of increasing the chances of a project going ahead: a design that has a certain value on paper is more credible and verifiable in the eyes of non-experts when it is represented as if it were already constructed, and even the architects seem more reliable from the client's viewpoint. So the photorealistic rendering takes on the role of a strategic image, used not just by architects to win a competition or convince a client, but also by the clients themselves to interact with the authorities and possible financial backers and to sell the project to its end users and by politicians to interact with electors. All the architects interviewed cited cases of competitions lost because their firm had not presented sufficiently realistic renderings, or because the type of image did not meet the strategic or political requirements of the client.



f3_CGI of the V&A Museum
Dundee, Scotland (REX), 2010 (© Luxigon)

three categories of photorealistic rendering

It is possible to break down the wide range of photorealistic renderings into three categories. Since this is a theoretical scheme, and given the ambiguity of the images, any particular rendering may fit into more than one category.

The first kind of photorealism is the most visionary, owing a lot to photography but also to animated and science-fiction films, and is made up of highly expressive and spectacular images, created mostly for competitions. They are images produced in close collaboration with the architects and maintain a continuity with other methods of representation (drawing, collage, scale model) utilized in the past to get across the vision of an architect and his idea of architecture[4]. These renderings are characterized by a certain degree of abstraction, since they are representations that evoke the atmosphere of a project still in an embryonic stage rather than describing it. They are decisive images, as they can influence the judgment of a competition jury or a client and win social and political approval or stir fierce controversy.

f4_CGI of the Elbphilharmonie
Hamburg (Herzog & de Meuron), 2006 (© Bloomimages)

Different are the cases of renderings that have attracted such attention from the public as to overshadow the projects themselves in the collective imagination, with a range of significant social and political implications. An example of this is Herzog & de Meuron's Elbphilharmonie in Hamburg, whose rendering produced by Bloomimages in 2006 proved such a success that it outshone the actual project, becoming an icon of the city long before a series of difficulties and delays were encountered in its construction. As the building will be inaugurated in 2017, many years behind schedule and at a cost three times the original estimate, its initial popularity has given way to a sense of disappointment and of the project's failure to live up to its promises. The building is still evaluated today in relation to the figure impressed on the collective imagination and not on the basis of its actual qualities[5].

A second type of photorealism is the one found in strictly promotional images. These renderings are usually commissioned directly by the developers of major property schemes to show the interiors of a building and their finishes (e.g. a model office or the rooms of an apartment or a hotel) to the end customers. They are stereotyped images, derived from the conventions of the professional photography of architecture, interiors and furniture, which often make use of wide angles and low viewpoints to make spaces look bigger. These images are very literal but some elements of them are not exactly realistic: for instance the sections of pillars, doors and windows are reduced and the air-conditioning system is never represented. In views of the exterior, when the rendering of the project is inserted in a photograph, an effort is made to eliminate any element that might spoil the effect, such as lampposts and road signs, fallen leaves and other things that would convey a sense of the season and a mood, just as too cloudy or dark a sky is avoided. Cranes and other means of construction are removed and even the surrounding buildings are cleaned up if dirty to convey a general feeling of "happiness", a word that cropped up frequently in interviews on the subject of rendering. Some rendering agencies that work in the more advanced and competitive sectors of the international real-estate market (e.g. Visualhouse with branches in New York, Los Angeles, Miami and London) do not confine themselves to creating images, but propose a complete strategy of branding to promote a project, in a manner not unlike the publicity of a luxury product, appropriate to the high-end real estate of the English-speaking world. In this sense Visualhouse's tagline "We envision design and

evoke desire"[6] typifies the way photorealism is used to stir an emotional reaction through images which convey an idealized vision of buildings, the city and life in them.

The third type of image, which I would define as super-photorealistic, is a highly detailed rendering that, unlike the ones I have just described, presents a meticulous view of the project and its possible uses, not just to communicate an atmosphere but also to squeeze a large amount of information into a limited series of images. They are images that owe a debt to architectural and landscape photography, but can also emulate amateur photographs and snapshots to produce a more casual effect. This kind of rendering is elaborate, requiring more time and costing more, and the images are created at a later stage than the competition, when the project is presented to a client or to the public, or for other needs of communication in which the architecture has to appear more realistic, as if it had already been constructed. Such images can be utilized to foster more open and participatory decision-making processes and to take a broader and profounder look at the relationship of new buildings with their preexisting surroundings, but it should not be forgotten that their purpose, like that of all renderings, remains the promotion of a project, which has to be the main subject of the images and always be shown in a positive light.

f5_CGI of 425 Park Avenue
New York (Foster+Partners), 2015 (© Visualhouse)

interactions of imagery: renderings, photographs, architecture

All the renderings described above have recurrent iconographic aspects that become noticeable when a certain number of them are compared and that contribute to the creation of architectural imagery. I will analyze three of them briefly by way of example, showing how these aspects correspond to tendencies in contemporary architecture.

One obvious feature is the presence of specific weather and lighting conditions–mist, snow, haze, cloudy or threatening skies– that help to give the project a mood, inspired by the climate and environment of its location. This is an element that sets rendering apart from professional architectural photography (from which these images derive a series of conventions), which tends, on the contrary, to normalize weather conditions, favoring clear light and sunny atmospheres. Some of these renderings impart the nebulous atmosphere of Romantic painting to new works of architecture, helping to shape an imagery in which the architecture is seen in relation to the places in which it is located, *naturalized*. The artificial look of many of these images seems to be reminiscent of the effect of science-fiction movies, reflecting overall that kind of "green" vision, poised between ecology and high-tech, that for some years now has been one of the principal rhetorical aspects of contemporary architecture.

f6_CGI of the Equator Tower
Kuala Lumpur (REX), 2012 (© Luxigon)

The second characteristic is represented by the bird's-eye view, which recurs in many images since it is often the only way to show buildings in their entirety. In this case too CGI parts company with the photography of architecture, as it would only be possible to take such pictures from a helicopter, harking back instead to the tradition of *veduta* painting and topographical representation, genres in which description has always been mixed with abstraction and invention[7]. These views, in fact, are realistic in everything but their point of view, which will never be experienced by anyone who sees or uses the building but has been chosen to emphasize its formal aspects, producing that effect of spectacularization of architecture and the city which is so widespread today. A variation on this theme is the so-called "flying-camera" view, a sort of close-up of a tall and transparent building whose interiors are visible and inhabited, with the urban landscape in the background. These

images, as spectacular as they are implausible in their viewpoint, recall both Michael Wolf's *Transparent City* photographs and the helicopter flights over American skylines that animate the credits of many films and TV series, confirming the extent to which the representation of architecture is indebted to the imagery of the media.

A third iconographic theme, and one linked to the previous one, is that of transparency, which has been persistently associated with an idea of modernity[8]. In many cases the buildings look like light and transparent geometrical solids, dematerialized to the point of losing any connection with reality. In addition, many projects are represented at dawn or dusk, when the interior of a building is visible from the outside, but their façades and the surrounding landscape are still clearly recognizable. *Literal* transparency is an obsessively recurrent feature of renderings, both because it allows more things to be shown in a single image and because it produces a spectacular impression already explored in the photography of American modernism[9]. The repetition of these specific moments of the day that emphasize the dramatic effects of transparency contributes to the process of dematerialization of architecture that was described as far back as 1955 by Rowe and Slutzky and characterizes a significant part of contemporary architectural production.

f7_CGI of 15 Hudson Yards
New York (Diller Scofidio + Renfro with Rockwell Group), 2012 (© Visualhouse)

problematics of photorealism

I would like finally to propose four short critical reflections on the type of reality depicted by renderings, since as we have seen it has to do with a strategic and political idea of reality that mirrors and helps to shape some important themes in contemporary architecture.

The first directly concerns the relationship between architecture and rendering. All the architects interviewed declared that there is a connection between the spread of these images and the spectacularization of architecture and the city in recent decades, as both 3D modelling and photorealistic visualization tend by their nature to privilege the more formal aspects of buildings, and this is valid for both the designer and the recipient of the final images. The result of this close relationship between reality and visualization is an incessant flow of spectacular images and forms, both real and virtual, at the expense of design practices that focus on other aspects of architecture.

Exuberance of form, or more simply an excess of photorealism in representation, can also lead to a series of disappointments when reality is compared with the image. A second critical issue concerns, in fact, the value of photorealism itself, for while these renderings are so realistic that they make architecture more accessible to the public, and can give rise to more complex and participatory processes of evaluation, it is easy for the attention of the uninitiated to focus not so much on the actual qualities of design evoked by the images as on the spectacle of the images themselves, leading to misunderstandings over the expectations and results of a project.

A third criticism of photorealism has to do with the sites of architecture and their endless diversity. Today architects work in an extreme territorial variety and many of the world's most spectacular buildings have been constructed, for example, in places conditioned by their climate, such as the Arabian Peninsula, or by pollution, like China and Southeast Asia. Yet the projects are often represented against the backdrop of improbably clear blue skies, resembling a mythicized Western landscape. This idealization of the landscape, instead of its realistic representation, is a true negation of reality that can only deepen the indifference to location and context with which a large part of international architectural production is charged. There are many reasons for this standardization of imagery, such as the need for new projects to stick to the vocabulary of modernism, or the difficulty developers and financiers have in promoting their investments by showing places very different from the idealized scenes of commercial renderings.

The last reflection concerns the context of buildings in a broader sense, i.e. the representation of their inhabitants. Whereas up until a few years ago people were visualized in renderings in a not very photorealistic manner, as silhouettes or transparent figurines, today's photorealism makes it possible to show places inhabited and in use. Thus deciding who will and will not appear in an image becomes not just a strategic factor for the project, but also a social –and political– matter, especially in the case of major public schemes. To take an example, in Paris a group of architects and investors recently won first prize in a competition held by the city administration for the 17th arrondissement, near the Périphérique[10]. The project was presented with a series of photorealistic and highly atmospheric renderings that showed the building in use, but from which Blacks and Arabs were absent, even though it is an outlying area of the city inhabited by a multicultural population.

coda

In conclusion, in the light of the characteristics that have emerged from analysis of photorealistic images, I think it is worth going beyond the notion of photorealism and turning instead to that of *hyperrealism*[11], i.e. a representation of reality in which some aspects have been artificially intensified, capable of forcefully prefiguring something new and making use of the sensory and synesthetic qualities of the images to produce an emotional and physical reaction in the viewer[12].

Renderings, in fact, do not *re*-produce architecture, but produce it, "a production which less often benefits the reality of architectural planning than it does dreams"[13]. Since, as we have seen, these images have an inventive and generative nature that is generally overlooked, the forms of hyperrealism, barely touched on here, seem to exemplify with greater clarity the capacity of these virtual representations to influence and shape reality, and could be a starting point for new perspectives of interpretation.

endnotes

1. Roger (1997).
2. E.g. Rose, Degen, Melhuish (2014) and the full issue of *Clog* 4 (2012). See also Elkins (1994)
3. Bates-Brkljac (2009).
4. Deriu (2014), Willis (1986), Moon (2005).
5. As documented in Zöllner, Christian. "The Elbphilharmonie Renderings". *Clog* (2012): 100-101.
6. www.visualhouse.co.
7. Lever and Richardson (1984).
8. Giedion (1941), Rowe and Slutzky (1963), Repishti (2005).
9. Ford (1998).
10. http://www.reinventer.paris/fr/sites/1251-pershing-17e.html.
11. Bredekamp and Stafford (2006), Baudrillard (1981).
12. Freedberg and Gallese (2007).
13. Benjamin (1988). The text was originally published in 1933. See also Lukacher (2006).

bibliography

_*Clog* 4 - Rendering (2012): 1-160
Bates-Brkljac, Nada. "Assessing perceived credibility of traditional and computer generated architectural representations", *Design Studies* 30, No. 4 (2009): 415-437.

_Baudrillard, Jean. *Simulacres et simulation*. Paris: Galilée, 1981.

_Benjamin, Walter. "Rigorous Study of Art. On the First Volume of the *Kunstwissenshaftliche Forschungen"*, trans. Thomas Y. Levin. *October* 47 (1988): 84-90.

_Bredekamp, Horst and Stafford, Barbara Maria. "Hyperrealism". *Tate Etc.* 6 (2006) and 5 (2005). http://www.tate.org.uk/context-comment/articles/one-step-beyond.

_Deriu Davide. "Transforming Ideas into Pictures: Model Photography and Modern Architecture". In *Camera Constructs*, edited by Andrew Higgott and Timothy Wray, 159-178. Farnham and Burlington: Ashgate, 2014.

_Elkins, James. "Art History and the Criticism of Computer Generated Images". *Leonardo* 27, No. 4 (1994): 335–342

_Ford, Edward. "The Inconvenient Friend". *Harvard Design Magazine* 6 (1998): 12-22.

_Freedberg, David and Gallese, Vittorio. "Motion, emotion and empathy in esthetic experience". *Trends in Cognitive Sciences* 11, No. 5 (2007): 197-203.

_Giedion, Sigfried. *Space, Time and Architecture: The Growth of a New Tradition*. Cambridge: Harvard University Press, 1941.

_Lever, Jill and Richardson, Margaret. *The Architect as Artist*. New York: Rizzoli, 1984.

_Lukacher, Brian. *Joseph Gandy: An Architectural Visionary in Georgian England*. London: Thames & Hudson, 2006: 11, 202.

_Moon, Karen. *Modeling Messages. The Architect and the Model*. New York: The Monacelli Press, 2005.

_Repishti, Francesco. "Colin Rowe and Transparencies". *Lotus* 125 (2005): 118-125.

_Roger, Alain. *Court traité du paysage*. Paris: Gallimard, 1997.

_Rose, Gillian and Degen, Monica and Melhuish, Clare. "Networks, interfaces, and computer-generated images: learning from digital visualisations of urban redevelopment projects". *Environment and Planning D: Society and Space* 32, No. 3 (2014): 386-403.

_Rowe, Colin and Slutzky, Robert. "Transparency: Literal and Phenomenal". *Perspecta* 8 (1963): 45-54.

_Willis, Carol. "Drawing Towards Metropolis". In *Metropolis of Tomorrow*, by Hugh Ferris, 148-188. Princeton: Princeton Architectural Press, 1986.

CV

Michele Nastasi. Is an architectural researcher and a photographer of architecture and cities. Since 2007 he has been a member of the editorial staff of the magazine *Lotus international*, and he is currently a PhD Candidate in the History of the Arts at Ca' Foscari University of Venice / IUAV. His photographs has been published in international journals and books –*Starchitecture: Scenes, Actors and Spectacles in Contemporary Cities*, with Davide Ponzini (New York: The Monacelli Press, forthcoming second edition, 2016; first edition Turin: Allemandi, 2011); *Suspended City: L'Aquila after the Earthquake* (New York: Actar, 2015); *Shooting Space: Architecture in Contemporary Photography*, ed. Elias Redstone (London: Phaidon, 2014)– and exhibited in numerous solo and group exhibitions in Italy and the United States (*Suspended City: L'Aquila after the Earthquake of 2009*, MIT, Cambridge, 2013; *Learning from Gulf Cities*, NYU, New York, 2016). He has taught Photography of Architecture at Milan Polytechnic.